

**Mexican Wolf Reintroduction Project  
Interagency Field Team Annual Report  
Reporting Period: January 1 – December 31, 2003**

**Prepared by:**

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**Agency Cooperators**

Arizona Game and Fish Department (AGFD)  
New Mexico Department of Game and Fish (NMDGF)  
U.S. Fish and Wildlife Service (USFWS)  
U.S. Forest Service (USFS)  
U.S.D.A.-A.P.H.I.S Wildlife Service (USDA-WS)  
White Mountain Apache Tribe (WMAT)

**Other Cooperators**

Defenders of Wildlife (Defenders)  
Turner Endangered Species Fund (TESF)

**INTRODUCTION**

Herein, we report the progress of field efforts during 2003 to reestablish Mexican wolves (*Canis lupus baileyi*) into the Blue Range Wolf Recovery Area (BRWRA) of Arizona and New Mexico (Fig. 1). The BRWRA encompasses approximately 6850 mi<sup>2</sup>, composed of the Apache-Sitgreaves National Forests (A-SNF) in east-central Arizona and the Gila National Forest (GNF) in west-central New Mexico. In 2000, the WMAT agreed to allow wolves to inhabit its reservation lands, adding approximately 2440 mi<sup>2</sup> to the recovery area. In 2002, the WMAT signed on as a primary cooperator, providing the potential for wolves to be directly released on tribal lands.

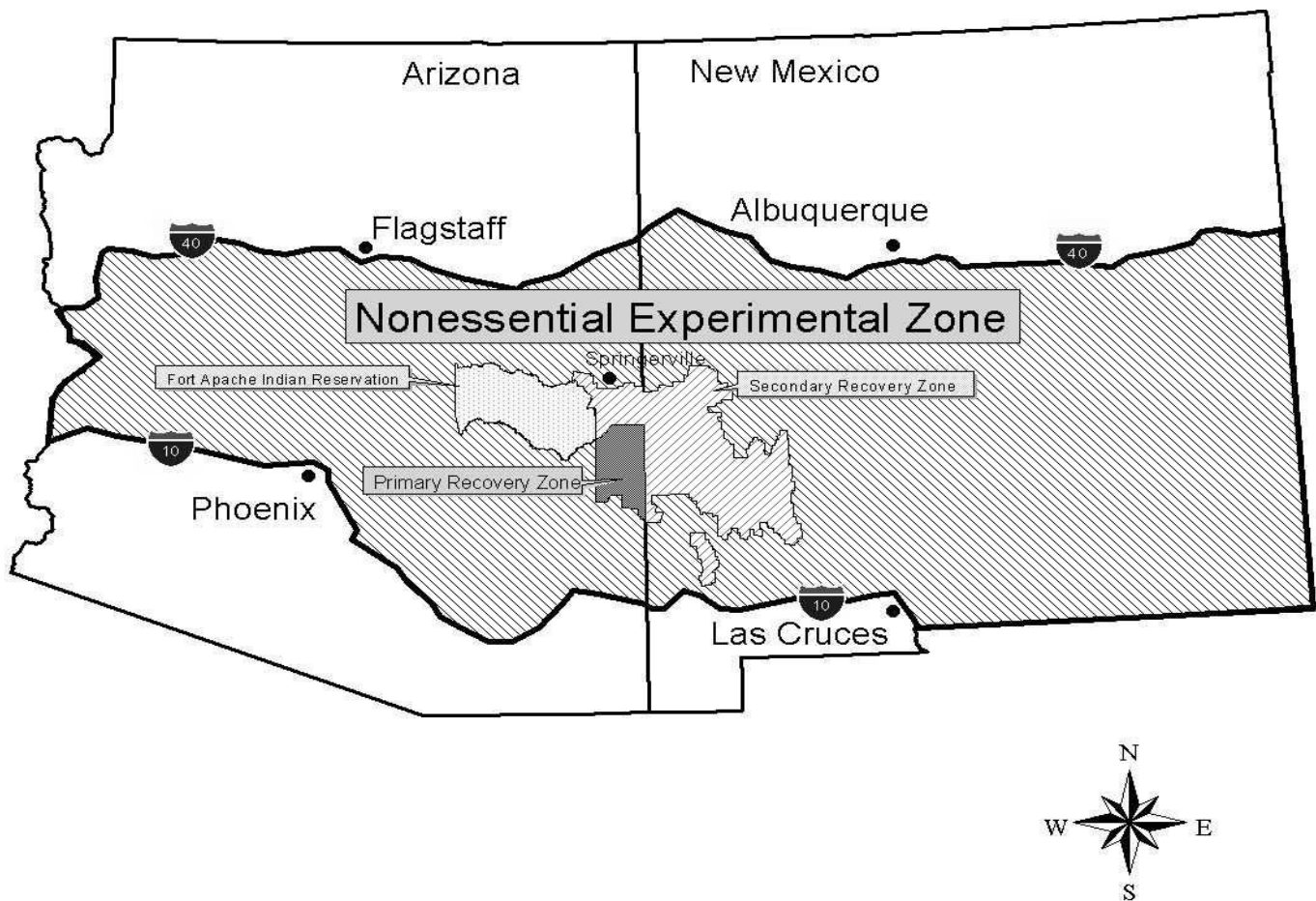
The primary goal of this reintroduction effort is to restore a viable population of Mexican wolves distributed across the BRWRA. In January 1998, the first release of Mexican wolves occurred, on the A-SNF of Arizona. At the end of 2003, approximately 55 wolves in nine packs inhabited recovery areas in Arizona and New Mexico. In addition, there are other wolves that are considered “status unknown”, because their deaths or continued free-ranging existence have not been documented.

**Abbreviations used in this document:**

Wolf age and sex:

A = alpha	mp = male pup (< 1 year old)
M = adult male (> 2 years old)	fp = female pup (< 1 year old)
F = adult female (> 2 years old)	
m = subadult male (1-2 years old)	
f = subadult female (1-2 years old)	

## Mexican Wolf Blue Range Wolf Recovery Area



**Figure 1.** The Mexican wolf Blue Range Wolf Recovery Area in Arizona and New Mexico.

## **METHODS**

The following methods section is primarily taken from previous Mexican wolf annual reports (U.S. Fish and Wildlife Service Mexican Wolf Annual Reports 1998, 1999, 2000; Arizona Game and Fish Department and U.S. Fish and Wildlife Service 2001, 2002). For purposes of this project, a wolf “pack” is defined as  $\geq$  two wolves (including at least one collared wolf) that maintain an established territory and are proven breeders. In the event that an alpha wolf dies, the pack status or name is retained by the remaining alpha wolf, regardless of pack size. A “group” of wolves is defined as  $\geq$  two wolves that travel together on a consistent basis but are not proven breeders. “Releases” are defined as wolves released directly from captivity, with no previous free-ranging experience, into the Primary Recovery Zone. “Translocations” are defined as free-ranging wolves that have been captured and moved from one area to another. This includes wolves that have been temporarily placed in captivity after they have been free-ranging.

### **Population Status**

Wolves were monitored using standard radio telemetry techniques from the ground and once or twice weekly from the air. Location data were entered into the project’s Access™ database for analysis. Population estimates were determined via howling surveys, visual observations, and ground tracking. Minimum population estimates incorporated the total number of collared wolves, uncollared wolves, and pups, documented by the end of September 2003. Pup and uncollared wolf counts were based on the latest date in the year in which accurate estimates were available. Pups, in general, are closely associated with collared animals prior to September, at den or rendezvous sites. After September, pups gradually become indistinguishable from other uncollared subadult wolves and occasionally display dispersal behavior or travel separately from the alphas with other uncollared members of the pack. This causes difficulties in accurately representing pup and uncollared wolf numbers after September.

### **Releases and Translocations**

Release candidate wolves were acclimated prior to release in USFWS approved facilities, where contact between wolves and humans was minimized and carcasses of road-killed native prey species (mostly deer and elk) supplemented their routine diet of processed canine food. These included the Ladder Ranch Captive Management Facility managed by the TESP (Ladder Ranch), the Sevilleta Captive Management Facility managed by the USFWS at Sevilleta National Wildlife Refuge (Sevilleta), and the Wolf Haven Captive Management Facility managed by Wolf Haven International (Wolf Haven). Sevilleta and the Ladder Ranch are in New Mexico and the Wolf Haven facility is in northwestern Washington. At each facility, genetically and socially compatible breeding pairs were established and evaluated for physical, reproductive, and behavioral suitability for direct releases into the wild. Some pairs produced pups in captivity before release; their pups and occasionally yearlings were included in the release group.

Wolves selected for release were radio-collared and given complete physical examinations prior to being transferred to the release locations. Caretaker camps were established approximately 0.5 miles away from pen sites. Carcasses of native prey and fresh water were provided as needed. When necessary, security was maintained by posted USFS closures of areas within approximately 0.5 miles of each pen.

Releases and translocations of wolf packs in 2003 used nylon mesh acclimation pens approximately 0.33 acres in size, with electric fencing interwoven into the structure. Flagging was attached to the pen walls approximately every two feet, as a deterrent to wolves running into the pen walls.

One pack was released in 2003, at Maness Peak (Fig. 3), on the A-SNF in Arizona. Three translocations of packs occurred in 2003, two at Miller Spring (Fig. 3), on the GNF in New Mexico, and a third on the Fort Apache Indian Reservation (FAIR) in Arizona. The translocation on the FAIR also included the release of offspring that were born in captivity.

All released and translocated wolf packs were provided supplemental road-killed elk and deer, or occasionally commercially produced “meat logs” formulated for wild carnivores. The duration of supplemental feeding varied, depending on time of year, availability of vulnerable prey, and whether pups were present. Supplemental feeding was gradually discontinued when wolves began killing prey.

### **Mortality**

Wolf mortalities were identified via telemetry and later confirmed by visual observation. The cause of death was investigated and determined by USFWS law enforcement agents in conjunction with the USFWS Forensics Lab (Ashland, Oregon). Financial rewards are offered for information leading to the conviction of individuals responsible for the shooting deaths of Mexican gray wolves.

### **Home Ranges and Movements**

Aerial locations of wolves were used to develop home ranges (White and Garrott 1990). We based home range polygons on one year (January-December) of locations evenly distributed across summer and winter seasons for wolves from a given pack (Mladenoff et al. 1995, Wydeven et al. 1995). To maximize sample independence, individual locations were only recognized for radio-marked wolves that were spatially or temporally separated from other radio-marked pack members. This approach limits potential pseudoreplication of locations.

Wolf home range size reaches an asymptote at around 30 locations; increasing the number of locations beyond this level has little effect (Carbyn 1983, Fuller and Snow 1988). We elected to use  $\geq 20$  locations per year as a threshold for analyzing home ranges. To account for this potential sampling bias (sometimes using  $< 30$  locations), we used the fixed kernel (FK) method to estimate wolf home ranges due to its low bias when sample sizes are small (Kernohan et al. 2001).

In contrast, previous wolf home range analysis has relied largely on the more liberal minimum convex polygon (MCP) method (e.g. Carbyn 1983, Fuller and Snow 1988, Burch 2001). FK home ranges derived from smaller sample sizes typically yield more accurate home range size estimates than other estimates that are more dependent on increased sample size to develop accurate home ranges (Seaman et al. 1999, Powell 2000, Kernohan et al. 2001). Thus, we used 95% FK approach to describe home range sizes due to its improved performance relative to other home range estimators. However, we used the 95% MCP method to describe occupied wolf

range, in accordance with the Final Rule for the Nonessential Experimental population of the Mexican gray wolf (50 CFR 17.84(k)).

Home range polygons were generated at the 95% level to represent home range use areas by wolves (White and Garrott 1990), using the FK method (Worton 1989) with least-squares cross-validation (LSCV) as the smoothing option in the animal movement extension in the program Arcview (Hooze et al. 1999; ESRI, Redlands, CA, USA). Occupied Mexican Wolf Range was defined by the 95% MCP, with a three mile buffer around all packs or groups that had  $\geq 20$  locations and five mile buffers around individual locations of wolves traveling alone and pack or group locations that had  $< 20$  locations, in accordance with the Final Rule for the Nonessential Experimental population of the Mexican gray wolf (50 CFR 17.84(k)).

### **Wolf Predation**

Project personnel investigated wolf-killed ungulates as they were found, analyzing the carcasses to determine sex, age, health, and whether or not the carcass was scavenged or was an actual wolf kill. In addition, we conducted intensive winter monitoring of four packs over a three-week period during March, to determine the health and type of prey consumed and to document minimum winter kill rates. Intensive winter monitoring involved acquiring daily locations of the four packs via aerial telemetry, to pinpoint kills and observe wolf numbers. Ground crews then examined kill sites to verify the type of species and determine the health and cause of death, when evidence was present.

### **Wolf Depredation**

USDA-WS personnel investigated suspected wolf depredations on livestock as soon as reports were received, most often within 24 hours. Results of all investigations were reported to the Cooperators and to DOW, a non-profit organization that compensates livestock owners for wolf depredations. Unfortunately, not all wolf-killed livestock are found in time to document wolf involvement. Thus, depredation levels in this report represent the minimum number of livestock killed by wolves (see Bangs et al. 1998, Oakleaf et al. 2003).

### **Management Actions**

If wolves localized near areas of human activity or were found feeding on cattle, they were hazed by chasing them on foot, horseback, or all-terrain vehicles. When necessary, rubber bullets, cracker shells, radio-activated guard (RAG) boxes, and other pyrotechnics were used to encourage a flight response to humans and discourage the nuisance behavior the wolves were displaying. Under circumstances where wolves were not responding to aversive conditioning attempts, animals were captured and removed from the wild or translocated into other areas within the recovery area. In addition, wolves that established territories outside the BRWRA, on private land or on the San Carlos Apache Reservation (SCAR), were captured and brought back into the BRWRA or returned to captivity, as mandated by the Final Rule for the Nonessential Experimental population of the Mexican gray wolf (50 CFR 17.84(k)). Capturing primarily occurred through the use of leghold traps; however, occasionally conditions required the use of helicopters. Trapping was also used to enhance the project's ability to monitor the population by increasing the number of radio-collared wolves, identifying and marking unknown wolves, and inspecting the health and condition of wolves in the wild.

## **Outreach**

Project personnel conducted outreach activities on a regular basis as a means of disseminating information from the field team to stakeholders, concerned citizens, and government and non-government organizations. This was facilitated through bi-weekly updates, field contacts, handouts, informational display booths, and formal presentations.

## **RESULTS**

### **Population status**

At the end of 2003, 23 radio-collared wolves were free ranging within the BRWRA, documented through telemetry, visual observations, and other evidence. There were also approximately 12 uncollared adult/subadult wolves and at least 20 pups documented by the end of September, via howling surveys, visual observations and ground tracking (Table 1, Fig. 2). The population consisted of nine packs (six in Arizona and three in New Mexico), four groups, and five single collared wolves. In addition, two packs (Sycamore, Red Rock) and one group (Cerro) were either removed or died during the year (see Mortality and Management Actions). Furthermore, there are other wolves that are considered “status unknown”, because their deaths or continued free-ranging existence have not been documented. In addition, there are likely other undocumented wolves free-ranging that have never been radio-collared. Undocumented wolves are most likely loners, but project personnel have investigated credible reports and have confirmed at least one group of uncollared wolves occupying an area along the Arizona/New Mexico border, east of Escudilla Mountain.

In 2003, seven packs (Hawks Nest, Cienega, Saddle, Bluestem, Bonito Creek, Gapiwi, and Luna) produced wild-conceived and wild-born litters. The Francisco pack bred in the wild, but presence of this pack on the SCAR forced their removal from the wild into captivity, where the pups were born and unexpectedly died.

A wild-born wolf bred and raised a litter of pups for the second time in 2003. This occurred with the Bonito Creek pack (F587 and M794), that pair bonded at the end of 2002, after the death of the original Bonito Creek AM674. The pair bred and produced at least two pups in 2003. In addition, due to the current number of dispersing adult and subadult wolves present in the wild several packs may form naturally in 2004, increasing the number of wild born wolves in the breeding population.

**Table 1.** Mexican wolf population estimates as of December 31, 2003.

<b>Pack</b>	<b>Wolf ID</b>	<b>Reproduction<sup>a</sup></b>	<b>Number of Collared Wolves</b>	<b>Number of Uncollared Adult and Subadult Wolves</b>	<b>Min Pack Size<sup>b</sup></b>
Hawks Nest	AF486, AM619	2	2	0	4
Cienega	AF487	2	1	2	5
Saddle	AM574, f797	5	2	1	8
Bluestem	AF521, AM507	2 (3 – 1 dead)	2	3	7
Hon-Dah	AM578	Undisclosed	1	Undisclosed	Undisclosed
Bonito Creek	AF587, AM794	Undisclosed	2	Undisclosed	Undisclosed
Francisco 2 <sup>c</sup>	AF511	0	1	0	1
Gapiwi	AF624	3	1	0	4
Luna	AF562, AM583	1	2	1	4
Group	f799, m729	NA	2	0	2
Group	m798	NA	1	1	2
Group	f858	NA	1	1 <sup>e</sup>	2
Group	NA	NA	NA	2	2
Single wolves	M832, f800*, mp859*, m795*, m796*	NA	5	NA	NA
<b>Totals</b>		20	23	12	55 <sup>d</sup>

<sup>a</sup> Reproduction - number of pups documented at the end of September 2003

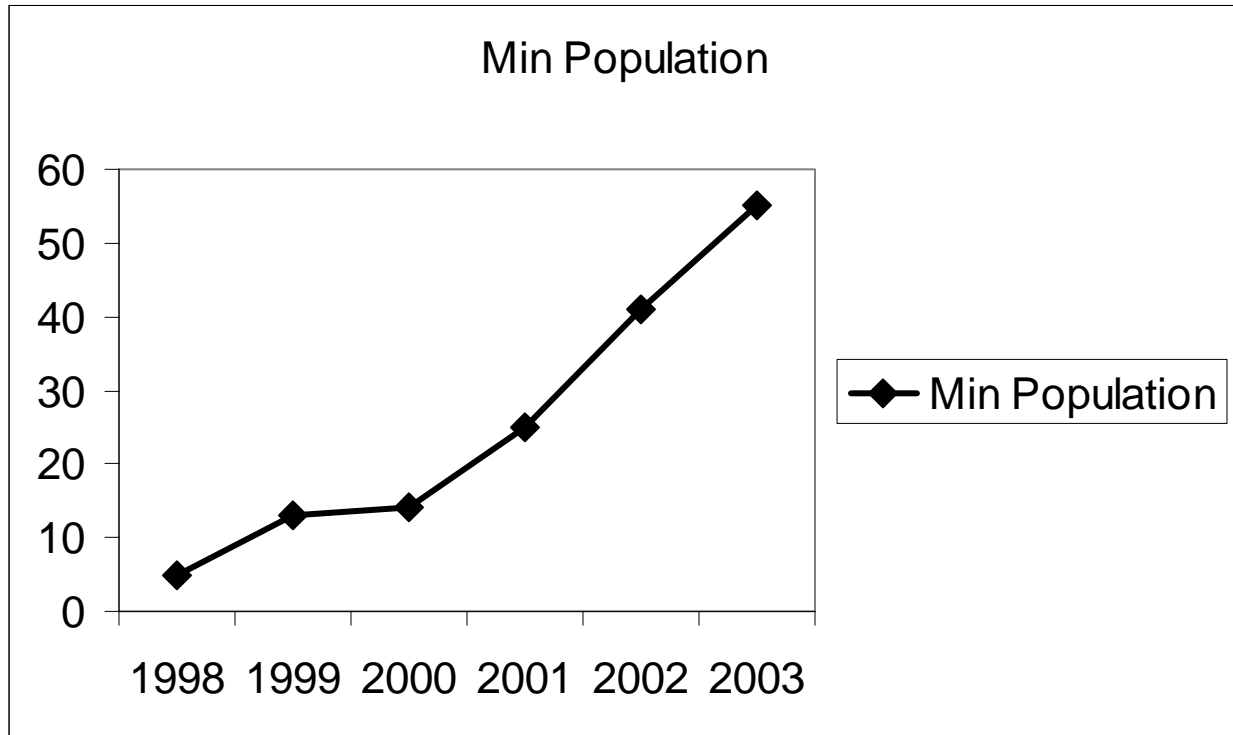
<sup>b</sup> Minimum Pack Size – total number of collared and uncollared wolves documented at the end of the year and pups documented at the end of September

<sup>c</sup>Francisco 2 – modified pack name due to translocation from the wild, back into the wild, after being held in captivity

<sup>d</sup>Total Minimum Population Estimate - includes 10 total wolves on the FAIR, from the Hon-Dah and Bonito Creek packs

<sup>e</sup>Uncollared wolf documented after the end of September 2003

\*Disperser – wolves traveling primarily apart from their pack of origin



**Figure 2.** Mexican wolf minimum population estimates from 1998 — 2003.

### **Releases and Translocations**

In 2003, one wolf pack was released into the Primary Recovery Zone, in the A-SNF of Arizona (Table 2, Fig. 3). On June 13, 2003, the Red Rock pack was released into the Maness Peak pen on the Alpine Ranger District; the pack broke out of the pen on the same day. Shortly after their release, the pack split, dispersing in different directions. At the end of 2003, only one of the four original pack members remained in the wild.

In 2003, three wolf packs were translocated from captivity back into the wild. Two translocations occurred in the GNF and one pack was translocated onto the FAIR (Table 3, Fig. 3). On April 8, 2003, the Sycamore Pack was transported to the Miller Spring site and remained in the pen until they were released on April 18. AF592 was bred in captivity and was pregnant at the time of the translocation (we think AF592 produced pups that, for unknown reasons, died shortly after birth). The Sycamore pair then traveled onto a ranch where they were involved in a cattle depredation, causing the removal of both wolves (see Management Actions). The Francisco pack was transported on June 25, 2003, to the Miller Springs pen, as a family unit without pups and were released on June 26. Initially the pack remained together; however, pack members soon began to disperse until the entire pack separated. The Hon-Dah pack was transported on June 23, 2003, to a pen on the FAIR. Five additional translocations occurred in 2003; each case involved a single wolf being removed from the SCAR and moved onto the A-SNF or the GNF (Table 3).



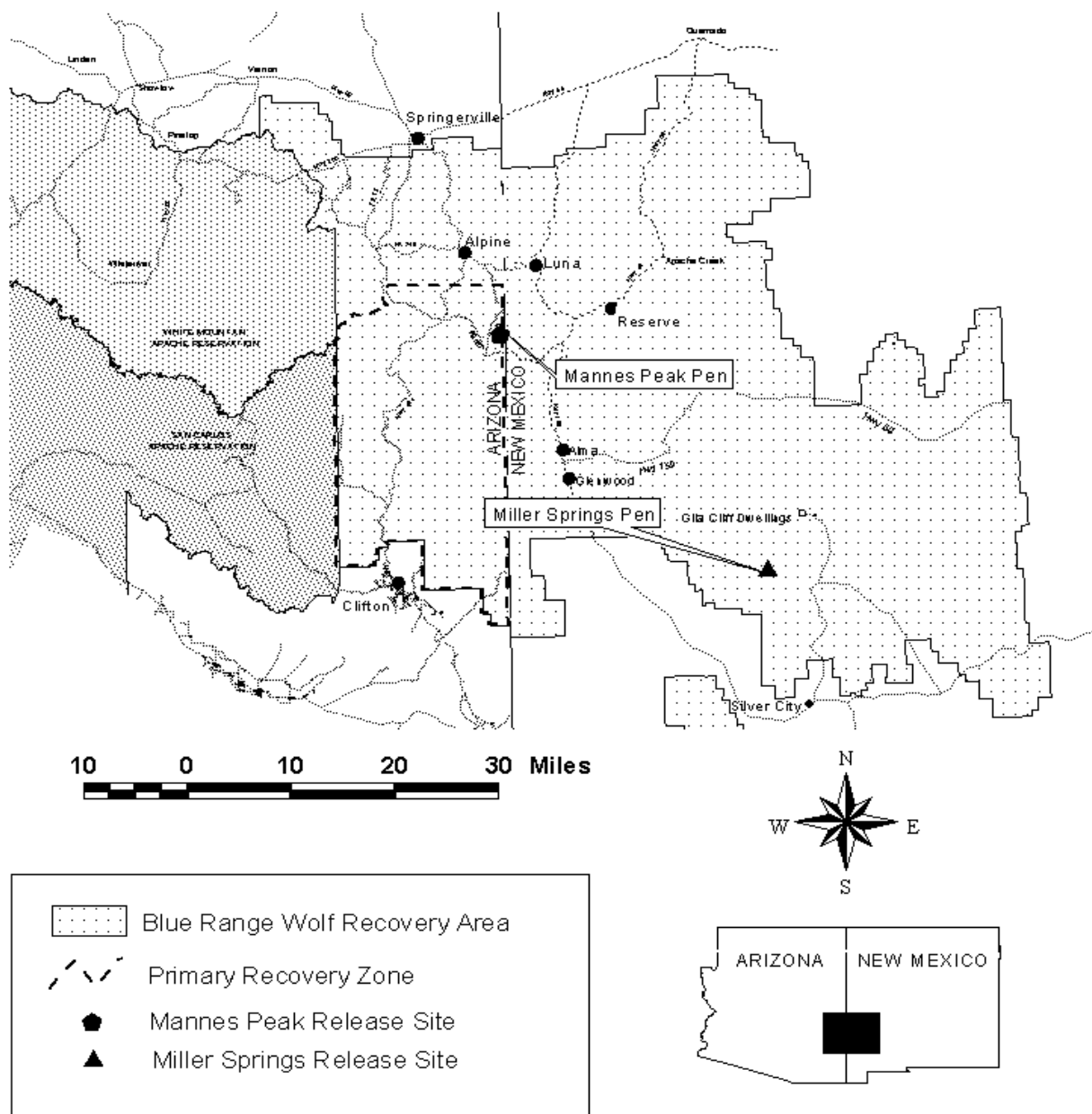
**Table 2.** Mexican wolves released from captivity without any prior history in the wild during January 1- December 31, 2003.

<b>Pack</b>	<b>Wolf #s</b>	<b>Release Site</b>	<b>Release Date</b>	<b>Reason for Release</b>
Red Rock	AM593, AF613, m729, m732	Maness Peak, AZ	06/13/2003	Increase genetic diversity in the BRWRA

**Table 3.** Mexican wolves translocated from captivity or the wild during January 1 – December 31, 2003.

<b>Pack</b>	<b>Wolf</b>	<b>Release Site</b>	<b>Release Date</b>	<b>Reason for Translocation</b>
Sycamore	AM648, AF592 (pregnant)	Miller Spring, NM	04/08/03	Increase genetic diversity in the BRWRA
Hon-Dah	AM578, AF637 (plus offspring)	FAIR, AZ	06/23/03	Increase genetic diversity in the BRWRA
Francisco	AM509, AF511, m798, f799, f800, m801	Miller Spring, NM	06/25/03	Return the pack to the wild
Bluestem	m639	Poll Knoll, AZ	01/30/03	Out of BRWRA, on SCAR
Bluestem	mp756	PS Knoll, AZ	02/21/03	Out of BRWRA, on SCAR
Unknown	M832	Turner Peak, NM	05/29/03	Out of BRWRA, on SCAR
Unknown	f858	Escudilla Mountain, AZ	11/22/03	Out of BRWRA, on SCAR
Unknown	mp859	Escudilla Mountain, AZ	11/23/03	Out of BRWRA, on SCAR

## Blue Range Wolf Recovery Area 2003 Release Sites



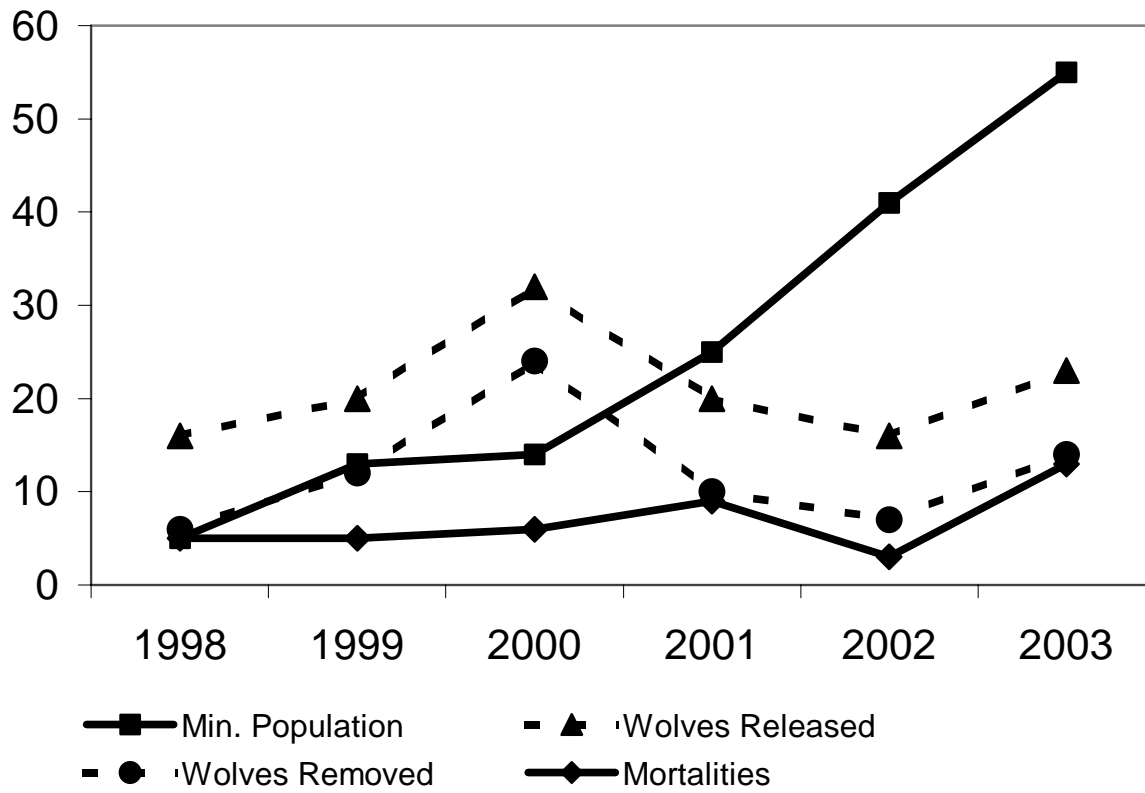
**Figure 2.** Mexican wolf release sites within the Blue Range Wolf Recovery Area in 2003.

### **Mortality**

Since 1998, 37 wolf mortalities have been documented, 13 of which occurred in 2003 (Fig. 4). This is the highest number of mortalities documented in a single year since the inception of the project. However, due to the increased number of wolves in the environment, the level of mortality versus the population size, is comparable to that observed in previous years. In addition, this should be considered a minimum estimate of mortalities, since pups and uncollared wolves can die and not be documented by project personnel. Most mortalities in 2003 for which cause of death was determined, were human caused, but some cases are still under investigation (Table 4).

**Table 4.** Mexican wolf mortalities documented during January 1 – December 31, 2003.

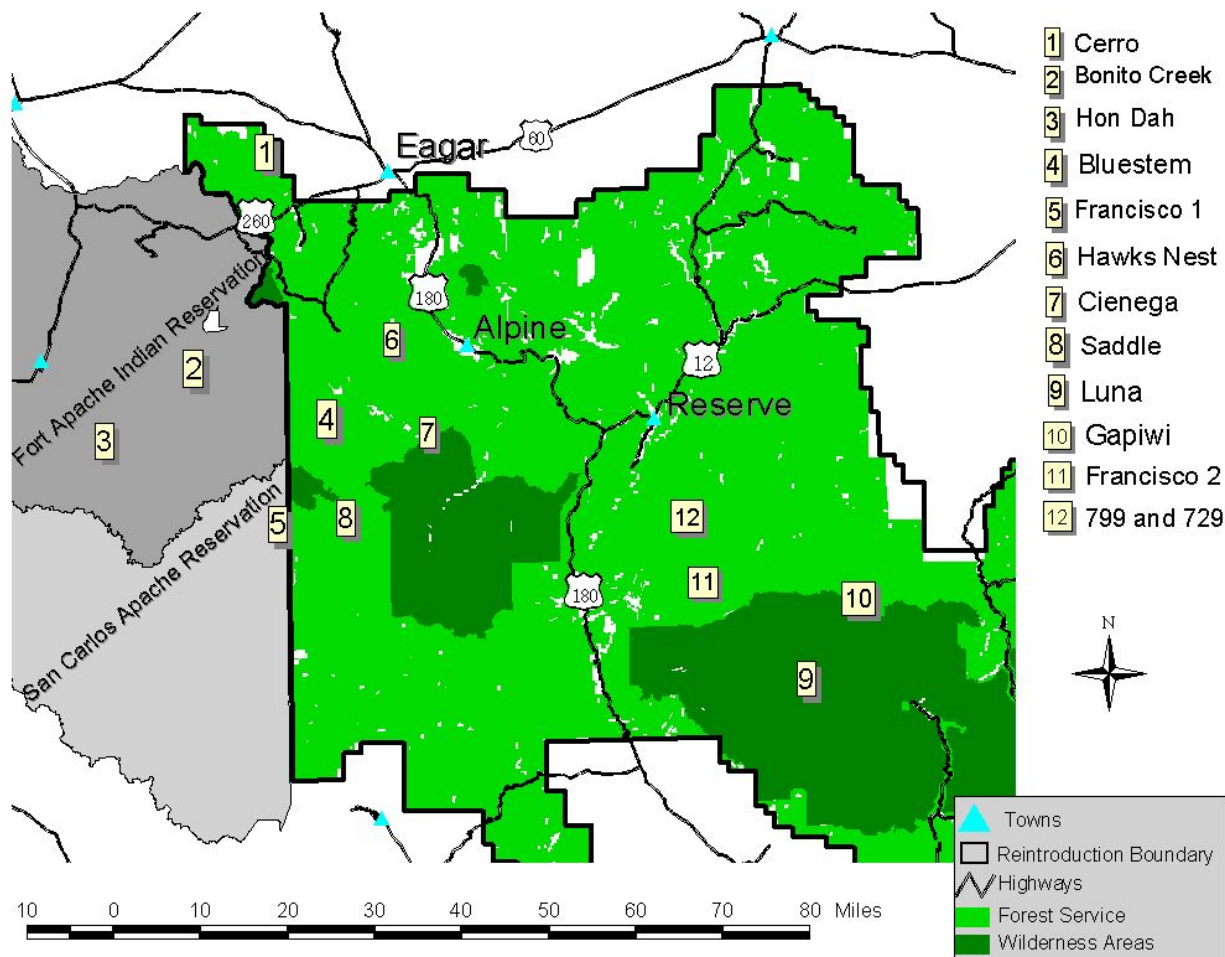
<b>Wolf ID</b>	<b>Pack</b>	<b>Age</b>	<b>Date Found</b>	<b>Cause of Death</b>
M639	Cerro	2.9	03/09/03	Illegal shooting
F644	Cerro	3.1	05/25/03	Illegal shooting
AF592	Sycamore	4.1	05/27/03	Lethal control
m756	Bluestem	1.1	06/09/03	Unknown/ decomposed
AM593	Red Rock	4.2	06/28/03	Vehicle collision
fp856	Bluestem	0.3	08/26/03	Illegal shooting
AF510	Saddle	6.4	09/15/03	Illegal shooting
m857	Luna	1.4	09/19/03	Vehicle collision
AM509	Francisco	6.4	09/24/03	Preliminary results; vehicle collision
AM584	Gapiwi	4.5	09/28/03	Preliminary results; illegal shooting
m801	Francisco	1.4	10/07/03	Preliminary results; vehicle collision
AM194	Cienega	8.8	12/21/03	Preliminary results; illegal shooting
AF637	Hon-Dah	3.7	12/24/03	Under investigation



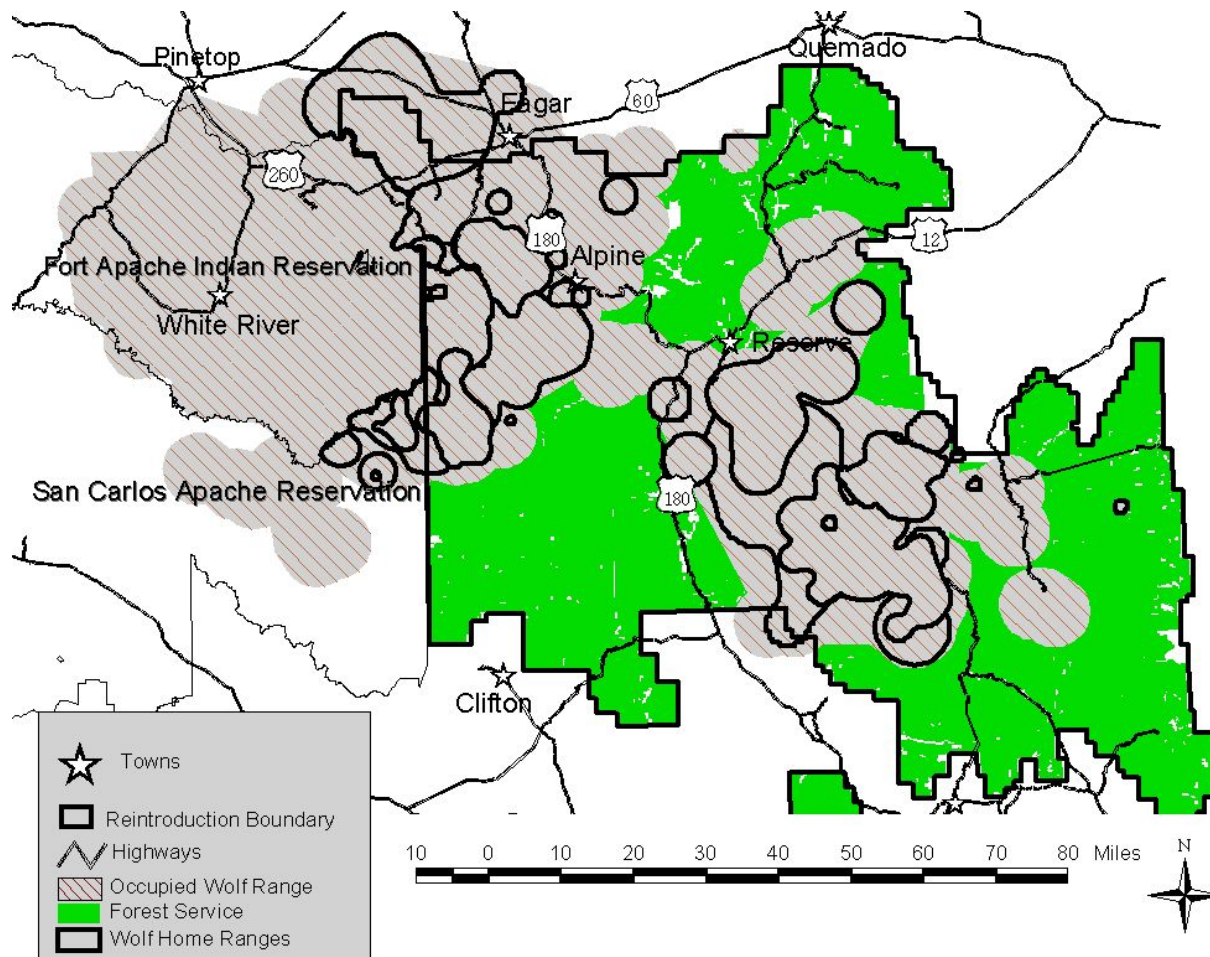
**Figure 4.** Mexican wolf population estimates and associated population parameters. Released wolves represent: translocations (wolves re-released from captivity back into the wild, and wolves removed from the wild and immediately re-released) and initial direct releases (wolves with no wild experience).

### Home Ranges and Movements

Most wolves exhibited normal home range use, except for four subadult wolves that exhibited typical dispersal behavior. Home ranges were plotted with a number to represent each pack or group respectively (Fig. 5). Home range sizes were calculated using the 95% FK method. The average home range was 280 mi<sup>2</sup> (725 km<sup>2</sup>), with a range of 40 mi<sup>2</sup> (103.6 km<sup>2</sup>) to 397 mi<sup>2</sup> (996.47 km<sup>2</sup>). Occupied Mexican wolf range using 95% MCP is displayed in Figure 6, along with pack and group home ranges calculated using the 95% FK method. In all, Mexican wolves occupied 5138 mi<sup>2</sup> (13,307 km<sup>2</sup>) of the BRWRA during 2003.



**Figure 5.** Mexican wolf packs and groups in 2003.



**Figure 6.** Occupied Mexican Wolf Range during 2003, based on 95% MCP home ranges with a 3-mile buffer and a 5-mile buffer around locations of individual wolves. At the request of WMAT, wolf home ranges (95% FK) are not shown on the Fort Apache Indian Reservation (FAIR) and occupied wolf range is shown as larger than the actual occupied range on the FAIR.

## Wolf Predation

During 2000 and 2001, a dietary study was conducted by Texas Tech. University, in association with the Mexican Wolf Reintroduction Project (Janet Reed, Texas Tech. University, personal communication). Scat was collected throughout the Primary Wolf Recovery Area for macroscopic and microscopic analysis to determine feeding habits. Percent frequency of occurrence (number of prey/total prey items) was used to determine the proportion of each prey species found in wolf scats. The following is a list of species found, with corresponding percentages: adult elk 36.6%, calf elk 36.2%, adult deer 2.6%, deer fawn 2.3%, unknown wild ungulate 10.4%, cattle 4.2%, small mammal 5.3%, birds 0.4%, insects 0.8%, plants 0.8%. These data support project observations that wolves are feeding primarily on elk (*Cervus elaphus*).

In 2003, the project began intensive winter monitoring to determine predator/prey relationships in the form of kill rates. This monitoring operation was conducted as a preliminary model to determine feasibility and its practical application, with intent to incorporate this form of monitoring into future, yearly operational plans. Over a three-week period that monitoring was conducted, nine carcasses were found (eight elk and one deer), of which only six were investigated: four elk calves, 1 adult deer, and 1 bull elk that had obvious ligament damage and bruising on one of its front legs. Elk were also the most commonly documented wolf kills found opportunistically throughout the year.

### **Wolf Depredation**

The 1996 Final Environmental Impact Statement (FEIS) predicted 1-34 cattle depredations per year when the Mexican wolf population reached approximately 100 wolves. This represented < 0.05% of all cattle present on the range (at the time the FEIS was written), which is only a fraction of the impact that other predators have on ranching within the Southwest (U.S. Fish & Wildlife Service 1996).

During 2003, 15 depredations were documented, including five confirmed, seven probable, and three possible depredations (Table 6). This is consistent with depredation levels predicted by the FEIS for a wolf population of this size (55 wolves). However, this should only be considered a minimum estimate, as some depredations may go undocumented (see Bangs et al. 1998, Oakleaf et. al. 2003). In 2003, project personnel and USDA-WS captured and removed two wolves to captivity because they localized outside the BRWRA and were associated with depredations. Another wolf was lethally removed for repeated depredations, after aversive conditioning and trapping efforts proved unsuccessful. Since the inception of the project in 1998, Defenders has paid a total of \$30,613 to livestock producers for losses due to Mexican wolves (Craig Miller, Defenders of Wildlife, personal communication).

**Table 6.** Wolf depredations occurring during January 1 – December 31, 2003.

	<b>Confirmed Depredation</b>	<b>Probable Depredation</b>	<b>Possible Depredation</b>
<b>Fatality</b>	1 cow 2 calves 1 lamb	1 cow 3 calves	1 cow 1 horse
<b>Injury</b>		3 calves	1 calf

In 2003, USDA-WS, in conjunction with the primary cooperators of the Mexican Wolf Reintroduction Project, began a research study in Arizona to assess domestic cattle mortality in an area of sympatric carnivores (Mexican wolves, mountain lions, black bears, and coyotes). 2003 represents the first year of a proposed five-year study, with the ultimate goal of identifying methods for reducing livestock mortality. Results from 2003 are not available for dissemination at this time.

### Management Actions

Capturing of wolves is a necessary management action used to enhance the project's monitoring capabilities, as well as to remove problem animals or wolves that have localized outside of the BRWRA, on private land or on the SCAR.

In 2003, 15 wolves in total were captured for management purposes. Ten of these wolves were removed from the SCAR and translocated to the A-SNF or GNF. Some wolves were temporarily placed in captivity prior to being translocated (Table 7). Four of the ten wolves removed from SCAR were uncollared when captured and outfitted with radio collars for monitoring purposes. In addition, five other wolves were captured for the following reasons: one wolf was captured for routine monitoring purposes, and four were removed for depredation and/or nuisance behavior (one was removed using lethal control, the others were returned to captivity). One of the wolves captured for nuisance behavior was returned to captivity for veterinary care because of broken metatarsal bones in a rear leg, which was not related to trapping activities.

**Table 7.** Mexican wolves captured during January 1 – December 31, 2003

Pack	Wolf ID	Capture Date	Reason for Capture
Francisco	f800	01/19/03	Removed from SCAR; transferred to captivity
Bluestem	m639	01/30/03	Removed from SCAR; re-collared/processed; translocated to Poll Knoll (A-SNF)
Bluestem	mp756	02/21/03	Removed from SCAR; collared/processed; translocated to PS Knoll (A-SNF)
Francisco	m801	04/07/03	Removed from SCAR; transferred to captivity
Francisco	AF511	04/09/03	Removed from SCAR; transferred to captivity
Francisco	f799	04/30/03	Removed from SCAR; transferred to captivity
Francisco	AM509	05/02/03	Removed from SCAR; transferred to captivity
Sycamore	AM648	05/21/03	Associated with cattle depredation; nuisance behavior; returned to captivity
Sycamore	AF592	05/27/03 lethal control	Confirmed cattle depredation; lethally removed after trapping efforts proved unsuccessful
Unknown	M832	05/28/03	Removed from SCAR; collared/processed; translocated to Turner Peak (GNF)
Red Rock	AF613	07/31/03	Injured; nuisance behavior; returned to captivity
Red Rock	m732	08/26/03	Confirmed cattle depredation; outside of BRWRA; returned to captivity
Gapiwi	AF624	09/12/03	Routine monitoring; collared/processed; released on site (GNF)
Unknown	f858	11/22/03	Removed from SCAR; collared/processed; translocated to Escudilla Mountain (A-SNF)
Unknown	mp859	11/23/03	Removed from SCAR; collared processed; translocated to Escudilla Mountain (A-SNF)



Aversive conditioning, in the form of pyrotechnics, rubber bullets, and RAG boxes, was used on seven wolves (two pairs and three single wolves) to discourage depredation, nuisance behavior, and localizing around rural residential areas. In most instances, hazing attempts had only short-term effects. However, project personnel did not document any depredations by m729 and f799, which had previously been associated with harassing cattle, after they were hazed.

## **Outreach**

To increase communication with the public, the Mexican Wolf Interagency Reporting Hotline, 1-888-459-WOLF (9653), was changed in July 2003 to ring directly through to the Alpine field office. In addition, a toll free number (1-800-352-8407) accessing a 24-hour dispatch was established for citizens to report wolf sightings, incidents, mortalities, and livestock depredations. Dispatch staff relayed information concerning wolf issues to the appropriate field project personnel, thus enhancing project response to critical issues.

During 2003, a two-tiered system was developed to facilitate internal discussions between project cooperators and to provide a forum for public participation in the adaptive management process. As a result, an Adaptive Management Oversight Committee (AMOC), including lead representatives from agency and county cooperators, and an Adaptive Management Work Group (AMWG), composed of agency cooperators, county cooperators, and the public, were developed. This system replaced the Interagency Management Advisory Group (IMAG), initiated in 2000. The primary focus of AMOC and AMWG is to maintain an evolving adaptive management and public participation process. The initial objective for AMOC was development and completion of a Memorandum of Understanding among the cooperators that identifies the implementation process, roles and responsibilities, accountability, and how business will be conducted among the reintroduction cooperators. AMWG acts as a conduit between AMOC and the public, where information is disseminated to the public, questions and concerns are addressed, and opinions can be heard. To encourage public participation, AMWG meetings are rotated between northern and southern Arizona and New Mexico, held within the reintroduction area, and held at least quarterly. In 2003, an IMAG meeting was conducted in Bayard, New Mexico (in March), and AMWG sessions were conducted twice in Arizona (Hon-Dah, in April and Safford, in October) and once in New Mexico (Glenwood, in July), with a combined public attendance of approximately 160 people.

Project updates were posted locally once each month in Alpine, Nutrioso, and Springerville, in places such as USFS offices, U.S. Post Offices, libraries, and on the USFWS Mexican wolf web site at <http://mexicanwolf.fws.gov>. Monthly project updates were also emailed and faxed from the Alpine field office to stakeholders and interested citizens. Interested parties were also able to sign up for the Mexican wolf listserve and receive the update electronically by visiting the AGFD website at [www.azgfd.com](http://www.azgfd.com). The AGFD website and listserve provide additional information about the Mexican Wolf Reintroduction Project, such as meeting agendas for AMWG, the interagency Memorandum of Understanding, Wildlife News Archives, news releases, and other resources that pertain to the reintroduction project. By the end of 2003, approximately 800 people had subscribed to the Mexican wolf list serve.

A brochure was created in 2003, with the assistance of a private individual, entitled "Living and Camping in Wolf Country." The brochure provides information on Mexican wolf and coyote identification, ways to avoid problems with wolves, and what may and may not legally be done when encountering wild wolves. The brochure is intended to be mailed to individuals reporting wolf sightings, and will be available at the AGFD Regional Office in Pinetop, all USFS Ranger Districts, and local businesses throughout the BRWRA. An informational poster, presenting similar information to what is in the brochure, was posted on kiosks at Blue Vista, Hannagan Meadow Lodge, Buffalo Crossing and the USFS Alpine District Office. The informational kiosk at Buffalo Crossing was erected by the project in cooperation with the USFS. Also, reward posters and "Wolf Country" metal signs were placed at trailheads, USFS kiosks, and local business in the BRWRA to provide information on how to avoid conflicts with wolves.

Project personnel contacted campers, hunters, and other recreationists in the BRWRA, providing them with information about the project. Notices were sent to 5,663 hunters who drew AGFD permits to hunt in management units 1 and 27 in Arizona. These notices advised hunters of the potential for encountering wolves, provided general recommendations for camping and hunting in wolf-occupied areas, and explained the legal provisions of the non-essential experimental population rule. In addition, the WMAT broadcasted an advisory message about wolves on the tribal radio station during the hunting season.

Project personnel gave 45 presentations and status reports to more than 5040 people in federal and state agencies, IMAG and AMWG meetings, professional conferences, conservation groups, rural communities, guide/outfitter organizations, livestock associates, schools, fairs, and various other public and private institutions throughout Arizona and New Mexico. In addition, project personnel provided interviews for local newspapers, National Public Radio (NPR), and NBC Nightly News with Tom Brokaw. In June, Animal Planet filmed and documented the capture and translocation of the Francisco pack into the GNF, in New Mexico. The program has been aired on Animal Planet's "The Jeff Corwin Experience" on numerous occasions.

People interested in receiving a wolf presentation should contact [alpinewolf@fws.gov](mailto:alpinewolf@fws.gov) or (928) 339-4329 to schedule an informational program.

## **SUMMARY**

The reintroduction project's population estimate for 2003, consisted of 23 radio-collared wolves, approximately 12 uncollared adult/subadult wolves, and 20 pups free ranging within the BRWRA. The population included nine packs (six in Arizona and three in New Mexico), four groups, and five single collared wolves. There are other wolves that are considered "status unknown", because their deaths or continued free-ranging existence have not been documented. In addition, there are likely other undocumented wolves free-ranging that have never been radio-collared. Undocumented wolves are most likely loners; however, project personnel have investigated credible reports of at least one group of uncollared wolves occupying an area along the Arizona/New Mexico border.

2003 marked the second year that a wild-born wolf bred and produced a litter of pups. In addition, five packs or groups have formed naturally during 2003. Each contained at least one

wild-born wolf. Thus, the number of wild born wolves in the breeding population should increase in 2004.

Since 1998, 37 wolf mortalities have been documented in the wild, 13 of which occurred in 2003. This is the highest number of mortalities documented in a single year since the inception of the project. However, because the total wild population is larger than before, this level of mortality is comparable to that of previous years in this project. Even so, the number of alpha wolves lost to confirmed or suspected shooting (three to six animals) is disturbing.

In 2003, wolves again fed primarily on elk. The number of livestock depredations in 2003 (five confirmed, seven probable, and three possible) was consistent with predictions in the FEIS for a wolf population of this size (55 wolves).

In 2003, 15 wolves were captured for management purposes. Ten were removed from the SCAR and translocated into the A-SNF or GNF. Four were removed from the population for depredating, nuisance behavior, or localizing around rural residential areas, including three that were placed in captivity and one that was lethally removed. Finally, one wolf was captured and collared for routine monitoring.

During 2003, two pairs and three single wolves were aversively conditioned with pyrotechnics, rubber bullets, or RAG boxes. Aversive conditioning attempts temporarily moved wolves out of sensitive areas, but the effects were primarily short term.

Project personnel provided monthly updates, posted signs, erected a kiosk, maintained project web-sites, developed a project list serve for disseminating information to the public, regularly contacted campers, hunters, and other recreationists, and gave 45 presentations and status reports to more than 5040 people to keep the public, government agencies, and non-government organizations informed about the program. Project personnel also provided interviews for local newspapers, National Public Radio (NPR), NBC Nightly News, and Animal Planet filmed and broadcasted a documentary on the reintroduction project. In addition, response time to critical issues has been enhanced through the development of a toll-free number at the field office and a corresponding 24-hour dispatch number.

## **DISCUSSION**

As outlined in the FEIS (U.S. Fish and Wildlife Service 1996), the project has met expectations for the total number of wolves, packs, wolves surviving from previous years, control losses, and the level of depredation that occurred in 2003. The total area occupied by Mexican wolves was twice the amount projected in the FEIS, indicating a larger average home range size for packs than was predicted. However, there have been shortfalls in the projected number of successful releases, number of pups born, number of breeding pairs, and a greater number of mortalities (e.g. "other losses" from the FEIS). This may in part be due to the number of wolves the project has removed for being outside of the BRWRA, the number of wolves that have been illegally shot, and the learning curve that captive-reared wolves face after being released into the wild.

Despite problems, Mexican wolves are persisting in the wild, and over time they are occupying more area in greater numbers. Packs continued to form naturally in the wild, and for the second time in project history, a wild-born wolf reproduced successfully. We believe more wild-born wolves will reproduce in 2004, and on into the future. In addition, more wolves conceived and gave birth to pups in the wild in 2003, when compared with previous years, with a significant number surviving into their first year. Project personnel also continued to respond and resolve major conflicts with livestock and nuisance wolves. In conclusion, Mexican wolves are producing pups, primarily feeding on wild ungulates, and showing expected population growth.

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## **APPENDIX A**

### **Pack Summaries**

#### **Bluestem Pack (AM507, AF521, M639, m756, fp856)**

At the beginning of 2003, the known wolves in the Bluestem pack were AM507, AF521 and M639. The fate of the five pups released with the pack in 2002 was unknown, although up to four uncollared wolves were seen with the pack on several occasions. On February 21, 2003, one of the pups released in 2002, m756 was captured on the SCAR while personnel were trapping other wolves. After his capture and re-release within Bluestem's territory, m756 was usually located with the alpha pair, until he was found dead on June 9. His carcass was too badly decomposed to determine a cause of death. M639 was trapped on SCAR on January 30 while personnel were trying to remove the Francisco pack from the reservation. He was translocated to the Poll Knoll area of the A-SNF. He eventually localized in the area of Cerro Montoso and Green's Peak. After being located with F644, the new pair became known as the Cerro pack (see Cerro Pack summary for further information). On August 26, a wolf pup carcass was found near Forest Road 25 in the A-SNF. The female pup was assigned the identification number fp856. Genetic tests revealed that she was a pup of the Bluestem pack. A necropsy determined the cause of death to be gunshot. Throughout the year, project personnel documented two additional pups and three uncollared sub-adults with this pack.

#### **Cerro Pack (F644, M639)**

Dispersing Francisco F644 was first located with dispersing Bluestem M639 on February 24. They remained together around Greens Peak and Cerro Montoso in the A-SNF, in Arizona, until M639 was found dead on March 9. Necropsy results determined that he had died from gunshot. F644 remained in that area and was seen with an uncollared wolf on May 14. She was found dead on May 25. Necropsy results determined that she had died from gunshot. The fate of the uncollared wolf is unknown, although on December 29 an uncollared wolf was seen in the same area with m798, originally from the Francisco pack.

#### **Cienega Pack (AF487, AM194, m795, m796)**

The alpha pair remained mostly within their traditional home range during 2003, although they seem to have shifted the core of their home range toward the northern portion of this area, compared with previous years. The pair denned and is believed to have weaned at least 2 pups this year. AM194 was found dead on December 21. Cause of death was unknown at the end of the reporting period. Wolf m795, wild-born in 2002, stayed with the alpha pair for most of the year. He began dispersal movements in early December and was located west of Cienega's traditional home range throughout December. Wolf m796, wild-born in 2002, stayed with the alpha pair for most of the year. During portions of March, April, and May, he was located north of Alpine, Arizona, around Escudilla Mountain, but returned to the alpha pair in May. Beginning in late November, personnel were unable to locate m796, but he was found in late December outside the BRWRA south of Magdalena, New Mexico, in the San Mateo Mountains.

**Saddle Pack (AM574, AF510)**

The alpha pair was believed to be the only members of the pack in the beginning of 2003. In April/May they denned and produced pups. Project personnel saw an adult uncollared wolf and five pups with the alpha pair in early summer. This would indicate that at least one pup from previous years survived, although this cannot be confirmed. Neither the pups nor the uncollared adult were definitively seen again. AF510 was found dead on September 15. The necropsy revealed that she was wounded by a bullet and later died of complications from the wound. AM574 was believed to be alone after the death of his mate until being located with f797 from the Francisco pack in October. The new pair remained together for the rest of the year.

**Hawks Nest Pack (AM619, AF487)**

Project personnel were unable to determine through telemetry whether the pair denned. Later in the spring, however, project personnel heard at least two pups howl with the alpha pair on several occasions, proving that the pair denned and produced pups. In spite of this, no pups or uncollared adults were seen with the pair during 2003.

**Bonito Creek Pack (AM794, AF587)**

The Bonito Creek pack shifted their territory westward toward the north-central part of the FAIR and used a new denning area. They were seen with uncollared wolves during the year, and project personnel documented pups through howling surveys.

**Hon-Dah Pack (AM578, AF637, mp823, mp824, mp825, fp826)**

The alpha wolves were previously released with other packs but recaptured for management purposes. The pair was united in captivity and they produced pups, which were released with the alphas on the FAIR, on June 23, 2003. The pack explored a relatively small territory during the rest of the year. On several occasions the alpha pair was seen with pups. AF637 was found dead on December 24, on the FAIR. The cause of death is under investigation.

**Francisco (AM509, AF511, f797, m798, f799, f800, m801)**

The SCAR requested the removal of the Francisco pack from tribal lands at the end of 2002. One by one, the pack was captured and transferred into captivity, except for f797, which evaded trapping efforts. AF511, which was pregnant at the time of capture, whelped in captivity; however, the pups did not survive. On June 26, the remainder of the pack was translocated into the Miller Springs pen, where they remained for two days before breaking out of the pen. Wolf f800 remained in the area, while the rest of the pack moved north out of the Gila Wilderness and separated. AF511 localized in the Corner Mountain and Bearwallow Mountain areas. AM509 used the Bearwallow Mountain area; however, it is unknown whether or not he and AF511 came in contact with one another. In September, AM509 moved south and was found dead near Silver City. The probable cause of death was vehicle collision. Wolf m801 moved into Arizona near Escondilla Mountain, then to the west of Springerville, Arizona, where he died on October 7. Preliminary results suggest that cause of death was vehicle collision. Wolf m798 spent a short time in the Rainy Mesa area before moving northwest into Arizona. He has localized in the Greens Peak area and has been observed traveling with an uncollared wolf. Wolf f799 localized in the Rainy Mesa area and began to travel with m729 from the Red Rock pack. Wolf f800 moved from Mogollon Creek and then localized north of the translocation site near Brushy



Mountain. In October, f800 moved northeast to the Aldo Leopold Wilderness and began using the area south of Beaverhead, New Mexico. Although the Francisco pack was confirmed to have depredated on livestock in Arizona, no evidence has been found to indicate that any members of the pack have depredated since the translocation.

Wolf f797 has remained in the Francisco pack's previous home range. In October, after the death of Saddle pack AF510, f797 began traveling with Saddle pack AM574. These two animals were still together at the end of 2003.

#### **Gapiwi (AM584, AF624)**

The Gapiwi pack was translocated into the Gila Wilderness in 2002. One pup was known to be with the pair until December 20, 2002. The fate of this pup is unknown. AF624 denned in 2003 on the northern edge of the Gila Wilderness; at least three pups were documented with the pair. In late September, AM584 was found dead west of Snow Lake. AM584's death remains under investigation; however, preliminary results suggest that he was shot. AF624 and the pups continued to use the Canyon Creek Mountains. Unsuccessful efforts were made to capture and radio collar the pups in October. The three pups were last observed in November. Although cattle were in the Gapiwi territory throughout the year, no depredations were documented.

#### **Luna (AM583, AF562)**

The Luna pack was translocated to the Gila Wilderness in 2002. The pair successfully raised two pups. In late February, two uncollared wolves were observed with the alpha pair. In 2003, Luna denned in the north/central area of the Gila Wilderness and remained there until December when they were located near Snow Lake. In September, sign indicated that the pair had at least one pup and one yearling with them. On September 19, an uncollared male wolf was found dead near Willow Creek, just north of the Gila Wilderness. The cause of death was collision with a vehicle. Genetic testing indicated that he was a member of the Luna Pack and was designated the identification number m857.

#### **Sycamore (AM648, AF592)**

AF592 and AM648 were released prior to whelping in the Miller Springs area of the Gila Wilderness. The pair was supplementally fed carnivore logs. AF592 appeared to den; however, on May 19, the pair moved northeast approximately 35 miles, indicating that AF592 had lost her pups. The pair was located near a ranch and were observed attacking cattle. AM648 was captured and returned to captivity on May 21. AF592 remained in the area and killed a domestic calf on May 27. Due to her previous history of livestock depredations, AF592 was lethally controlled on May 27.

#### **Redrock (AM593, AF613, m729, m732)**

On June 13, 2003, the Red Rock pack was released into the Maness Peak pen on the A-SNF, in Arizona. Shortly after the release, the pack separated and dispersed in different directions. AM593 moved north towards Springerville, Arizona and on June 28 was found dead on US Highway 60 west of Quemado, New Mexico. The cause of death was collision with a vehicle. AF613 moved northeast to the Tularosa River near Cruzville and Aragon, New Mexico. As a result of her frequenting areas of human development, unsuccessful aversive conditioning

attempts, and the killing of a domestic turkey, AF613 was captured. Examination revealed a broken rear foot, consequently she was returned to captivity to receive veterinary treatment, where she remained until the end of 2003. Wolf m729 moved east to the Rainy Mesa area of the GNF. Successful aversive conditioning was implemented after he was observed harassing cattle. Wolf m729 began associating with f799, originally from the Francisco pack, and remains with her in the Rainy Mesa area. Wolf m732 moved west to the FAIR then south out of the BRWRA to the Black Hills east of Safford, Arizona. After depredating on a domestic calf, m732 was captured and returned to captivity.

## **Individual Wolf Summaries**

### **M832**

M832 was trapped by project personnel on SCAR, at the Tribe's request, on May 28, 2003 after several sightings of an uncollared wolf near Point of Pines. He was collared and translocated to Turner Peak, north of Luna, NM. Genetic tests showed that he was most likely linked with the Francisco pack; however, definitive results are still pending. He ranged widely throughout the A-SNF, FAIR, and SCAR. He traveled briefly with the Bluestem pack in October, but was believed to be alone for the remainder of the year.

### **f858**

Wolf f858 was trapped on SCAR by a coyote trapper on November 22. She was removed from the reservation at the Tribe's request, and collared and translocated to Escudilla Mountain, in Arizona. She traveled south and spent December south of the Mogollon Rim on the A-SNF. Genetic tests to determine her pedigree were pending at the end of 2003.

### **mp859**

Wolf mp859 was trapped on SCAR by a coyote trapper on November 23. He was removed from the reservation at the Tribe's request, and collared and translocated to Escudilla Mountain, in Arizona. Wolf f858 was captured a day earlier from the same location, which lead project personnel to believe that the two wolves were either traveling together and/or related. As a result of this assumption, mp859 was released at the same site; however, the two wolves were never located together again. Wolf mp859 spent December around Escudilla Mountain and in nearby areas of New Mexico. Genetic tests to determine his pedigree were pending at the end of 2003.

## **APPENDIX B**

### **Personnel**

The following personnel were involved in the project during this reporting period. Individuals listed below collected data or provided other information for this report.

#### U.S. Fish and Wildlife Service

Brian Kelly, Mexican Wolf Recovery Coordinator (left June 2003)  
Colleen Buchanan, Assistant Mexican Wolf Recovery Coordinator  
John Oakleaf, Mexican Wolf Field Coordinator  
Dan Stark, Assistant Mexican Wolf Field Coordinator  
Maggie Dwire, Mexican Wolf Biologist  
Curtis Graves, Special Agent (left November 2003)

#### Arizona Game and Fish Department

Dan Groebner, Region I Nongame Specialist  
Paul Overy, Arizona Field Team Leader  
Rich Bard, Wolf Technician  
Shawna Nelson, Wolf Technician

#### New Mexico Department of Game and Fish

Nick Smith, New Mexico Field Team Leader

#### USDA-APHIS Wildlife Services

Alan Armistead, Wolf Management Specialist (left November 2003)  
J Brad Miller, Wolf Management Specialist (started June 2003)  
J.R. Murdock, Wildlife Services Technician

#### Turner Endangered Species Fund

Melissa Woolf, Mexican Wolf Biologist

#### White Mountain Apache Tribe

Krista Beazley, Tribal Field Team Leader

#### Texas Tech. University

Janet Reed, Masters Student (Dietary Study)

#### Volunteers

Jeanine Colby	Colby Gardner	Jesse Lewis	Janet Reed
Steven Roenfeldt	Melanie Skane	Josh Smith	Helen Trotman
Melissa Watkins			

#### Defenders of Wildlife

Helen Trotman, Intern  
Nahum Sanchez, Mexican Intern